



# RMS Partnership

## *A Newsletter for Professionals*

July 2002

Reliability, Maintainability, & Supportability

Volume 6 Number 3



## Future Logistics Enterprise

by Lou Kratz

The Future Logistics Enterprise (FLE) is DOD's mid-term vision (2005-2010) to enhance support to the warfighter and align logistics processes with the operational demands of the 21<sup>st</sup> century. The primary objective of the FLE is to ensure consistent, reliable support that meets warfighter requirements through enterprise integration and end-to-end customer service. The FLE builds upon and accelerates specific, ongoing Service/Agency initiatives to meet the requirements of the Quadrennial Defense Review and the National Defense Strategy. The six initiatives are:

- Total Life Cycle Systems Management (TLCSM)
- Condition-Based Maintenance + (CBM+)
- Depot Maintenance Partnerships
- End-to-End Distribution
- Executive Agents (EA)
- Enterprise Integration (EI)

...Continued on page 2

## Chairman's Corner



### Recognizing the Re-emerging RMS in the Life Cycle Management Process

Russell A. Vacante, Ph.D.

During the last decade or so the readership of this column and many of those who I have come in contact with have heard me beat the preverbal drum in favor of making RMS considerations an integral part of the life-cycle management process. The importance of RMS issues and requirements, I believe, are increasingly recognized by decision-makers in both industry and government. The day for the re-emerging of RMS issues has finally come, and not too soon I might add. For the purpose of this article, the beating of the drum will be placed in the background while I discuss various approaches to help transition the discipline of RMS back into the work environment.

...Continued on page 12

## Contents

Future Logistics Enterprise.....	1
By Lou Kratz	
Chairman's Corner .....	1
By Dr. Russell A. Vacante	
Navy Auxiliary Power Unit (APU) Total Logistics Support (TLS) Program .....	6
By Michael Underwood	
Project Development Using A Product Support Performance Based Logistics Strategy .....	8
By Kenneth H Brockel	
Points of Contact .....	16

### RMS Partnership Newsletter

Editor in Chief

Russell A. Vacante, Ph.D.

Production Editor

Paul Burton

Assistant Editor

David L. Place

Published quarterly in the months of January, April, July, and October.

To fully assess the policy and implementation of those initiatives, the Deputy Under Secretary of Defense (Logistics and Materiel Readiness) [DUSD(L&MR)] established the Joint Logistics Board (JLB). The JLB members are the commanders of the Service materiel commands, senior Service staff logisticians, the Joint Staff Director for Logistics, the Deputy CINC US Transportation Command, and the Director, Defense Logistics Agency. This paper documents the results of the JLB's initial effort to assess policy and describe the near-term way ahead to implement the six initiatives.

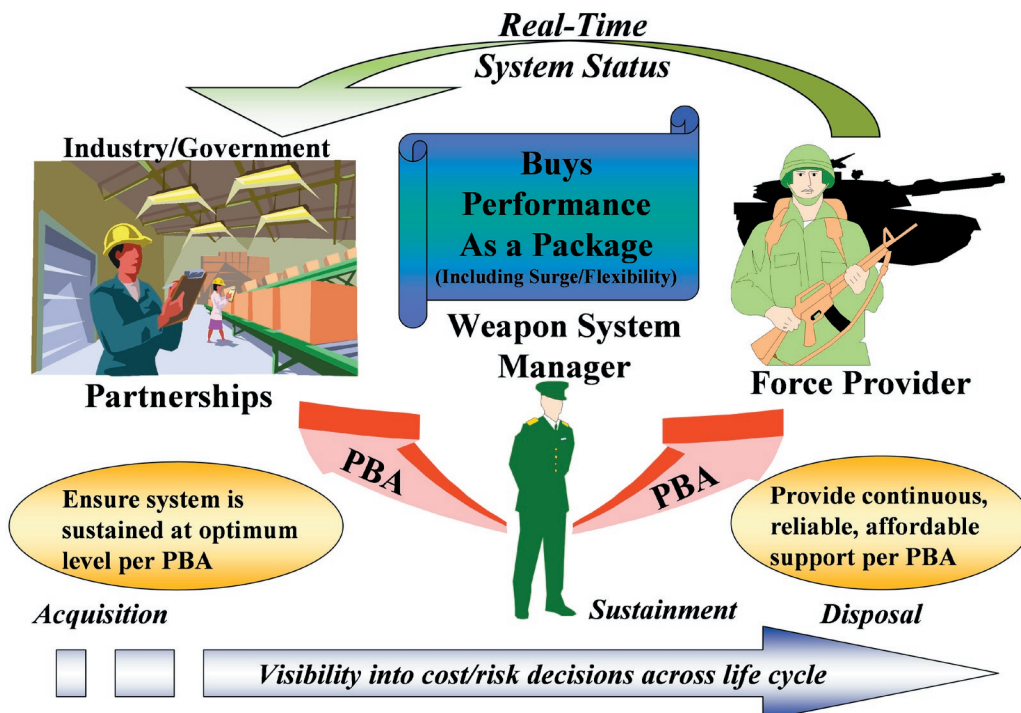
## **Total Life Cycle System Management (TLCSM)**

Sustainment of DOD systems consumes approximately 80 percent of DOD logistics resources or \$62B annually. End-to-end customer support for system sustainment involves the integration of logistics chains across government and industry throughout the life cycle of a system. Specific DOD challenges in this area include:

- Sporadic attention to sustainment characteristics during the early requirements process;
- Distinct break in systems responsibility between the acquisition and sustainment phases of the life cycle; and
- Sustainment processes focused on functional optimization versus customer service.

To address these challenges, the Services and DLA tested innovative sustainment strategies on pilot programs. DOD directed application of promising strategies and established the program managers as responsible for the total life cycle (acquisition and sustainment) for new systems. Subsequently, the QDR directed application of life cycle management and performance-based logistics (PBL) for new and fielded major systems.

The primary intent of Total Life Cycle System Management is to improve weapon system sustainment by establishing clear responsibility and accountability for meeting specified warfighter performance requirements within the program management office, as shown in Figure 1.



**Figure 1 – Performance-Based Logistics**

PMs will be held responsible for the overall management of the weapon system life cycle to include: timely acquisition of weapon systems, integration of sustainability and maintainability during the acquisition process, and weapon system sustainment to meet or exceed warfighter performance requirements throughout the life cycle at best corporate value to the Services and DOD.

## **Condition-Based Maintenance Plus (CBM+)**

Today, the DOD does not adequately predict failures on equipment to produce broad-based planned maintenance programs. The inability to adequately predict failures requires a labor force with extensive knowledge and training, diagnostic equipment that is cumbersome, time consuming and often unreliable, long repair cycle times which result in expensive supply pipelines. Many of the current business processes rely on time or operation intervals for servicing that are labor intensive and fail to address specific conditions driven by environmental and operational factors. Additionally, there is a need to better integrate maintenance and other logistics functions to improve responsiveness and reduce footprints. Moving toward CBM+, with more accurate predictions of impending failures based on condition data, would result in dramatic savings and improved weapon system availability to meet CINC requirements.

CBM+ focuses on inserting into both new and legacy weapon systems, technology to support improved maintenance capabilities and businesses processes. It also involves integrating and changing business processes to dramatically improve logistics system responsiveness. Under consideration are capabilities such as enhanced prognosis/diagnosis techniques, failure trend analysis, electronic portable or point of maintenance aids, serial item management, automatic identification technology and data-driven interactive maintenance training. The ultimate intent of this initiative is to increase operational availability and readiness throughout the weapon system life cycle at a reduced cost. The desired end state is a force of maintainers who have the knowledge-skill sets and tools to maintain complex systems at the optimal time through the use of available technologies that improve maintenance decisions and integrate the logistics processes.

## **Depot Maintenance Partnerships**

Depot maintenance services, costing over \$17B annually, today are performed at a mix of 20 public and hundreds of private facilities. The primary intent of the depot maintenance partnership initiative is to enhance depot support to the warfighter by enabling and empowering the DOD organic depots to develop appropriate partnerships with the commercial sector, while recognizing the legitimate national security need for DOD to retain depot maintenance capability. The desired end state is a dramatic increase in depot maintenance public-private partnerships, resulting in greater private sector investment in facilities and equipment, better facility utilization, reduced cost of ownership, workforce integration, more efficient business processes, and greater credibility.

Unlike commercial supply chains, maintenance is the largest component of our life cycle sustainment. Our efforts are directed towards ensuring that we maintain viable, output-focused depot capability to support US and Allied forces. We are completing regulatory and statutory changes so that DoD depot resources may work more closely with industry to provide modified, upgraded or refurbished weapon systems. These partnerships enable use of shared facilities and equipment, work forces, and supply management functions.

Two provisions beneficial for depot maintenance partnering were included in the recent National Defense Authorization Act for Fiscal Year 2002. These provisions exempt partnering work from the 50 percent limit on contracting when accomplished by the private sector at designated depots and amend several "hold harmless" provisions to include cost, schedule, and quality as a basis to file a claim if the public sector fails to comply with a contract. A comprehensive policy memorandum was promulgated providing a framework to aggressively expand partnering.

## End-to-End Distribution

Currently, the DoD distribution environment is comprised of multiple, unsynchronized distribution nodes and segments, with rescheduling often required at each change of transportation mode. DoD employs a myriad of discrete supply chains that are optimized at the item/commodity/customer/mode level but not harmonized at the enterprise level. This distribution environment places a heavy materiel-tracking burden on the customer, who lacks complete information and end-to-end visibility. This often creates unnecessary customer workloads at the point of receipt, which is especially critical when the point of receipt is an austere area of conflict.

The end-to-end distribution initiative is directed toward streamlining warfighter support by providing materiel, including retrograde and associated information, from the source of supply or point of origin to the point of use or disposal, as defined by the CINC, Military Service, or characteristics of the commodity, on a worldwide basis. The intent of the initiative is to influence acquisition, sourcing, and positioning to facilitate the flow of materiel to the end user, ensuring that deployment and sustainment are synchronized. The desired end state is an integrated, synchronized, end-to-end distribution system to meet warfighter requirements for information and materiel.

## Executive Agents (EA)

This initiative is aimed at improving support to warfighters by ensuring that Executive Agents roles, responsibilities, resources, and capabilities are responsive to the supported Combatant Commanders' deployment and sustainment requirements. The initiative builds upon the emerging results of the recent Focused Logistics Wargames, analyses of EA responsiveness, and applications of customer relations management.

The primary intent of the EA initiative is to assess and align EA designations with warfighter requirements arising from the National Defense Strategy, as shown in Figure 2. The desired result of this initiative is a formal assignment process focusing logistics EA responsibilities on support of warfighting requirements; EA assignments that support the warfighter across the full spectrum of operations, including support on an end-to-end basis and rapid response to all deployments; improved crisis/deliberate planning to include EA responsibility and alignment of the resource (budget, force structure, etc.) responsibilities associated with the EA.

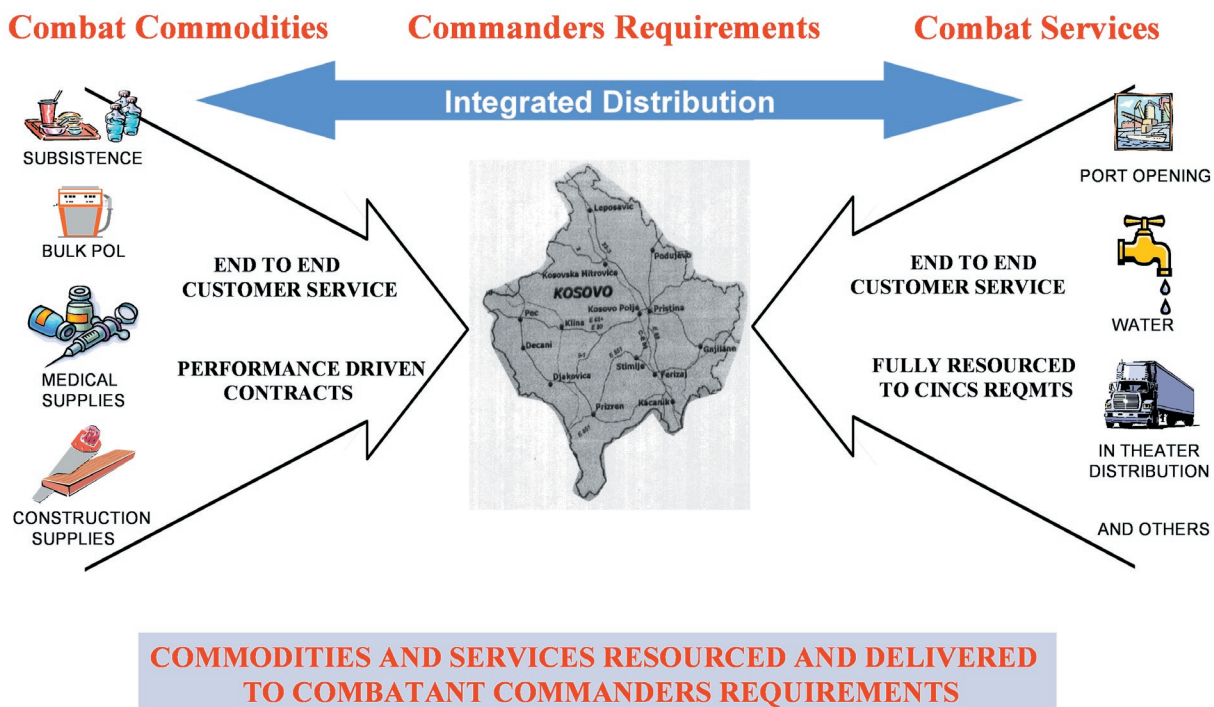


Figure 2 - End-to-End Customer Support



## **Enterprise Integration (EI)**

Presently, interactions among DoD customers and partners are characterized by paper-based and batch-processed transactions, created and recreated in a sequential chain of activity – functional stovepipes. These processes and transactions do not capitalize on today's technology and best practices. Over the years, lack of oversight and real portfolio management produced thousands of logistics systems and associated interfaces, which must be sustained and maintained. It's estimated that between \$1.5B and \$2.5B is spent annually to support these logistics systems that remain susceptible to errors and delays that do not support today's more agile, lethal defense forces.

To accelerate development of a logistics EI, this initiative builds upon efforts, underway within the Services and DLA, which successfully use commercial Enterprise Resource Planning (ERP) and other Commercial Off-the-Shelf (COTS) tools for modern, integrated solutions to complex information requirements across the DoD logistics enterprise. Since changes to commercial software increase cost and risk, the initiative seeks to avoid software change by identifying common, reusable business practices assumed by available software that will support participants across the enterprise. The initiative is based upon phased implementation with adequate training and the full support of leadership. Collaborative solutions and shared knowledge will be encouraged through policy initiatives and oversight. The desired end state of this initiative is for highly trained and skilled people within the DoD logistics enterprise to have access to near real time, actionable information provided by modern, commercially-based software products that have been rapidly implemented to enable reengineered logistics processes and business rules.

## **Summary**

The operational demands of rapid deployability, reduced footprint, and assured sustainment dictate that the Department of Defense migrate to a more focused logistics structure built upon end-to-end customer service and enterprise integration. The DoD, through the leadership of the Joint Logistics Board, is aggressively moving out to implement the Future Logistics Enterprise. These initiatives will ensure we continue to provide our frontline warriors with the logistics excellence they deserve.

**Lou Kratz** is the Assistant Deputy Under Secretary of Defense (Logistics Plans and Programs), within the Office of the Deputy Under Secretary of Defense (Logistics and Materiel Readiness). As such, he is responsible for guiding the DoD's logistics process improvement efforts to meet the operational requirements of the 21<sup>st</sup> Century. Mr. Kratz oversees the development of DoD's long-range logistics planning to meet the requirements of Joint Vision 2020 and the implementation of DoD's performance-based product support practices. Mr. Kratz leads DoD's acquisition logistics policy development and serves as the Defense Standardization Executive.

### **If you are interested in contributing**

to future editions of our newsletter, please contact

Russ Vacante at [russv@erols.com](mailto:russv@erols.com).

Articles can range in size from one to five pages and should be of a general interest to our members

## **Navy Auxiliary Power Unit (APU) Total Logistics Support (TLS) Program (F/A-18, P-3, S-3, C-2, KC-130 Aircraft)**

by Michael Underwood

The APU TLS is a 10-year, fixed-price, Commercial program that guarantees both reliability improvements and worldwide asset availability for key Navy aircraft. The APU TLS initiative creates a Public-Private Partnership designed to provide comprehensive depot-level support of four different APU systems used on the F/A-18, P-3, S-3, C-2 and KC-130 aircraft at a lower cost than the Navy is currently experiencing. The contract is performance based, with metrics established for reliability and availability of the APU's. This contract was awarded June 8, 2000.

Utilizing an Integrated Program Team, TLS combines the maintenance process knowledge of Naval Aviation Depot (NADEP) Cherry Point's workforce with the unique APU product and engineering knowledge of Honeywell to form a performance-based Public-Private Partnership. In addition, TLS employs Honeywell's Logistics Alliance business to provide integrated logistics and information management services. Honeywell has partnered with Caterpillar Logistics Services, the world's premier provider of logistics services, to provide supply chain management and total asset visibility. The comprehensive services provided for TLS include: inventory management, warehousing, distribution, surge capability, field service engineering, component improvement engineering, configuration management, technical data, information technology, data systems, and Internet utilization.

As the world's leading APU manufacturer, Honeywell is committed to invest the necessary engineering and financial resources required to achieve the reliability goals proposed in the TLS program.

The long-term Public-Private Partnership between Honeywell and NADEP Cherry Point is designed to share, optimize, and leverage each partner's skills, experience, processes, and technologies without threatening jobs or workload distribution. Other benefits are NADEP Cherry Point's access to Honeywell's proven "Lean manufacturing" and "Six Sigma" process improvement technologies and one-stop product support.

Recently this successful partnership between Honeywell, the United States Navy's Auxiliary Power Unit Total Logistics Support (APU TLS) team was awarded the Admiral Stan Arthur Award for Logistics Excellence. The award is given to U.S. Navy employees who were able to achieve impressive business results through collaboration with Honeywell.

The Navy team is comprised of members from the Naval Inventory Control Point (NAVICP) in Philadelphia, NAVAIR, and Naval Aviation Depot Cherry Point. The cross-business Honeywell team is comprised of the TLS team from Defense & Space Tempe, Military Repair and Overhaul Center (MROC) and Airframe Systems (AFS) of Phoenix, and the Honeywell Alliance with Caterpillar Logistics (The Alliance) in Phoenix and Havelock, NC. (The Navy team has also won two Department of Defense Acquisition Excellence Awards and is one of five Navy finalists for the David Packard Excellence Award.)

The logistics support strategy created for the APU TLS program in its first year achieved results of 96 percent off the shelf availability (SMA) and 86 percent worldwide delivery per contract metric. Customer wait times were reduced from 35 days to five days. Current delivery performance is at 99 percent and SMA is at 100 percent for the second consecutive month. The total ownership costs have been reduced from what the Navy previously spent for these services.

NADEP Cherry Point views this Public-Private Partnership as **win-win**. TLS has created a new and unique template for reengineering logistics processes, improving availability rates, and enhancing hardware performance while significantly lowering life cycle costs.

**Michael Underwood** is the Air Force Account Team Leader for Honeywell's Defense and Space sector within their Aerospace Business Division. Mike is responsible for marketing, market analysis and development and customer support of Air Force programs. Prior to joining Honeywell, Mike enjoyed a 26 year career in the United States Air Force. While in the Air Force, Mike had various operational and acquisition assignments of increasing responsibilities. He was a Command Pilot with over 4400 flight hours. He received his bachelor's degree in Biology from the United States Air Force Academy and his masters degree in Operations Management from the University of Arkansas.



**RELIABILITY, SUPPORTABILITY &  
MAINTAINABILITY (RMS) PARTNERSHIP**

**Course Offering**

Course Title: Relating Reliability, Maintainability & Supportability to Improving Readiness and Reducing Life Cycle Costs

This course will consist of five topics. The first topic will cover the relationships between operational availability (Ao) and readiness rates, how reliability, maintainability and supportability impact Ao, a listing of metrics that drive readiness and Ao and finish with a diagram showing how readiness impacts system effectiveness and operational effectiveness.

The second topic will cover cost effective sparing to availability, life cycle support costs including those driven by reliability, availability and maintenance and analysis concepts for managing the reduction of life cycle costs in acquisitions.

The third topic will cover a set of existing, linked models that can significantly improve DoD acquisition logistics policy implementation during equipment development prior to fielding.

The fourth topic will cover the Achieving a System Operational Availability Requirement (ASOAR) Model, which is an earliest-on reliability, availability, maintainability, and supportability trade-off analysis tool.

The final topic (optional) will cover a set of existing Quantity Discount Analysis Models that relates re-procurement demands after equipment fielding to determining lowest total cost buys.

Instructor: Bernard Price has been a Systems Analysis Division Chief within the Army Communications Electronics Command since 1986 and a Certified Professional Logistician since 1978. The Systems Analysis mission is to apply methodologies and develop models that lead to cost effective recommendations among alternatives, aid best value decision-making and improve processes. Mr. Price received a Masters Degree in Industrial Engineering from Texas A&M University, a Masters Degree in Electrical Engineering from Fairleigh Dickinson University and a Bachelor of Science in Engineering from the California State University at Northridge. He is a member of both the National Engineering Honor Society (Tau Beta Pi) and National Industrial Engineering Honor Society (Alpha Pi Mu).

**Interested parties contact: Dr. Russell A. Vacante at [russv@erols.com](mailto:russv@erols.com)**

**This Newsletter is available on the RMS Partnership  
Homepage @ <http://www.enre.umd.edu/rms>**



## **Project Development Using A Product Support Performance Based Logistics Strategy**

By Kenneth H Brockel

The AN/PRC-112 weapons system product support team developed a project plan designed to purchase an integrated affordable acquisition logistics package for this product line. The program is designed to purchase a number of components, and logistics services in such a way as to assure that the system is optimized at the highest level of readiness while maintaining an appropriate level of affordability. On December 23, 2000, the government team awarded a contract to Engineering and Professional Services (EPS) for the purpose of upgrading the AN/PRC-112 Survival Radio, designing out the obsolete modules and replacing them with state of the art circuitry. EPS has formed a consortium with Tadiran/Spectralink, Kaiser Electronics and Tobyhanna Army Depot (TYAD) to provide the AN/PRC-112 Modernization Through Spares (MTS) improved product for the Government. The consortium breaks down this way. EPS as the prime contractor is responsible for the Program Management and Integrated Logistics Support of this contract. Tadiran/Spectralink is responsible for the technical oversight of the MTS upgrade program and will be repackaging the current Survival Radio circuitry of their PRC-434 into the AN/PRC-112 radio. Kaiser Electronics will be the producer of the new circuit cards and any future end item AN/PRC-112 production. Tobyhanna Army Depot (TYAD) will be responsible for the incorporation of these cards and components into existing inventory AN/PRC-112 radios and will assemble any new radios to be produced on this contract.

Concurrently, CECOM has also awarded an option on the EPS contract to provide commercial rechargeable/non-rechargeable batteries for the AN/PRC-112 radio. EPS, together with American Competitiveness Institute with assistance from PENN STATE UNIVERSITY are the developers of these products. At present, the radio is using an Army unique battery which must be ordered through the supply system which is time consuming and expensive. To reduce costs, we are planning on using commercial rechargeable/non-rechargeable batteries. The concept is to design a new line of battery cases and adapters to facilitate use of consumer AA battery cells (primary or rechargeable). The adapters will facilitate charging or powering the 112 during tactical missions through external power sources such as solar panels and zinc air power packs. The army will provide the batteries through DLA or from our industrial based team. All these products will be offered to the users as secondary items as a part of a catalog of options that can be tailored to the varied missions required for this product line.

The development effort has been funded in part by the army reliability, maintainability, supportability (RMS) and operations support cost reduction (OSCR) program initiatives lines. These program initiatives are focused in part on improving PRODUCT AVAILABILITY through the tenants of RMS. The RMS work on the AN/PRC-112 is primarily directed towards designing out the obsolete modules and reducing the existing number of eleven circuit cards to two. In effect, this will create sufficient space in the radio for a slot that can accept potential capabilities, such as a secured Global Positioning Satellite transponder, Search and Rescue Satellite Aided Tracking and over the horizon capabilities. The collateral benefits of the improved inherent reliability (MTBF) will improve from the current 3500hrs to in excess of 10000 hrs ("R" in the RMS equation).

Also in the power mgt energy enhancement domain, the performance specification targets a 40 % reduction in energy. The old requirement was for the radio to operate 12 mission hours on the existing battery. We have a new requirement for the upgraded radio to operate at 20 mission hours when using the non re-chargeable batteries. For the rechargeable option this "on line time" is increased to infinity given the alternate sources of energy are available. This is a major improvement in the one of the most important MISSION CRITICAL METRICS for this product.



As a result of effective competitive contracting procedures, including a focused market survey, the award of this contract to the EPS consortium has reduced the DOD acquisition cost of the product base by better than 50%. Also a major pre-solicitation effort to model the acquisition/logistics factors required to successfully execute the project was accomplished. This effort, that utilized the tool set of logistics models developed in CECOM DCSOPS as well as a number of 112 unique spread sheet models, was directed towards establishing government cost estimates, developing the RMS BASED METRICS used in the solicitation as well as to formulate the detail required to develop the acquisition plan for this long term contract that has been awarded to the EPS winning team.

Integrated in this contract, we have a “no fault reduced demand incentivized” warranty for the new circuit cards/other component parts. All failures are covered to include items with defects which are beyond the control of, and not attributable to the contractor. This warranty concept is focused on both the R and the S in the RMS equation.

Using the Performance Based Logistics strategy for purchasing the products and services will provide the ultimate in ultra reliable products for the war fighter at the right price.

**Kenneth H Brockel** is Chief of the Airborne Mission Division at the Communications Electronics Command (CECOM), Ft. Monmouth, NJ. Mr. Brockel received his BSEE from the University of Toledo (Ohio) in 1967. He began his career in industry, at Frequency Engineering Laboratories (FEL) in Farmingdale, NJ where he was a microwave development engineer. In government since 1975, he has worked in areas of tactical radio, and communications technology. Since 1983 Mr. Brockel has held key management positions in the research, development, and readiness areas. Mr. Brockel has been a leader in developing the C3 modeling and simulation program for the Army. He has published numerous technical papers on a wide variety of communications technology subjects. He also holds a number of patents developed in the communications reliability modeling simulation field. Mr. Brockel was the architect of the Specifications and Standards Acquisition Reform (SSAR) program within Ft. Monmouth's Team C4IEWS community. He has been a leader in developing the Army's Modernization Through Spares (MTS) Program. Currently Mr. Brockel is responsible for managing the airborne mission programs at CECOM. He remains active as a senior member of the army's Overarching Integrated Product Team (OIPT) for MTS to facilitate the continued development and improvement of the MTS/Continuous Technology Refreshment (CTR) program for the Army. He has very active over his career in a number of professional societies.



## RMS Consulting Services

You Have the Need –We have the Experts

The RMS Partnership has available reliability, maintainability and supportability experts for temporary full-time or part-time consulting. E-mail your technical requirements, time and location where the consulting services are to be performed, along with your name and telephone number, to Dr. Russell A. Vacante, [russv@erols.com](mailto:russv@erols.com). Our employment coordinator will respond to your e-mail request in a timely manner.

## 2002 INTERNATIONAL MILITARY & AEROSPACE / AVIONICS COTS CONFERENCE, EXHIBITION & SEMINAR

**MISSION VALLEY MARRIOTT, SAN DIEGO, CA**  
**AUGUST 7 - 9, 2002**

### **SECOND CALL FOR PAPERS**

This conference, for the past fourteen years, has been dedicated to issues assuring the highest quality, availability, reliability and cost effectiveness of microelectronic technology and its insertion into high performance, affordable systems. Commercial-off-the-shelf (COTS) issues include the application of non-military plastic encapsulated microcircuits (PEMs) on commercially produced printed circuit boards and assemblies used in these systems. Discussion of recent developments and future directions will assure relevance of material. The conference will continue to highlight the issues concerning commercial technology insertion; why, how, selection process, quality & reliability assurance and the concern caused by obsolescence.

The topics of interest include:

Best Commercial Practice  
COTS Acquisition  
Advanced Packaging  
Supplier/Part Qualification  
Assembly Requalification  
Contract Houses  
Screening  
COTS Test & Evaluation

Chip/System Reliability  
PEM Field Data  
PCB Issues  
Uprating  
Open System Design  
Plastic Packaging  
Failure Mechanisms  
COTS Reliability& Sustainment

COTS Dormant Storage  
Physics of Failure  
Obsolescence  
Space Qualification  
Technology Advancements  
Reliability Prediction  
COTS Support

*Other topics will be considered. Must have relevance to the theme of the Conference.*

- **Tuesday August 6, 8:00 AM to Noon, the Seminar “Design for Obsolescence” will be presented by Khanan Segal, Segal Technology Consultants.**
- **On Tuesday August 6, from 1:00 to 5:00 a Seminar entitled “A Bipartisan View (OEM and IC Supplier) of Microelectronic Quality, Reliability and Qualification” will be presented by Gene Hnatek, Director of Strategic Manufacturing Projects, Xilinx Inc.**

**Exhibitors will be on hand to discuss relevant products & services**

#### **In Affiliation With:**

**Johns Hopkins University Applied Physics Laboratory, Laurel, MD,  
Naval Surface Warfare Center, Crane, IN  
Jet Propulsion Laboratory, Pasadena, CA**

**PAPER SUBMISSION:** Authors are requested to Email a one-page Abstract to the **Conference Chairman** by May 1, 2002 for review by the Program Committee. Abstracts must include author's name(s), affiliation and complete address, Email, fax & telephone numbers. Abstracts will be selected on the basis of technical merit, supporting test results & overall suitability. Notification of paper acceptance or rejection will be Emailed by May 15, 2002.

A formal paper is not required for the Proceedings. Please note that this conference is open to Non-U.S. citizen participants. Company and/or Government clearance of the paper is the author's responsibility.

#### **TECHNICAL PROGRAM COMMITTEE**

Stan Purwin (Chairman)  
Johns Hopkins University APL, Laurel, MD

Chuck Pagel, Naval Surface Warfare Center, Crane, IN  
Tom Stadterman, Army Materiel Systems Analysis Activity, Army Proving Ground, MD.

#### **CONFERENCE CHAIRMAN & COORDINATOR**

Edward B. Hakim  
The Center for Commercial Component Insertion Inc. (The C3I Inc.)  
2412 Emerson Ave.  
Spring Lake, NJ 07762  
Tele (732) 449-4729 Fax (775) 855-0847 Email: ebhakim@bellatlantic.net

To receive a registration package, including Conference Agenda and Registration Form, please complete the enclosed Notice of Intent & return to the Conference Chairman by May 15, 2002.

To assure that sufficient rooms are available at the conference rate, it is critical that the Notice of Intent be submitted.

Single & double room rates: Government Room Per Diem is available for all attendees at \$99.00

plus tax per night. The cut-off date for this room rate is July 9, 2002. Be sure to make room reservations well before July 9 to be sure of this conference rate. Registration Fee of \$400 includes continental breakfasts, coffee breaks, lunches, cocktail reception, Conference Abstract Booklet and Conference Proceedings. Registration Fee received after July 25, 2002 will be \$475.00.

**Speaker & Student Registration Fee will be \$250.00.**

**If you have interest participating as an Exhibitor, contact the Conference Chairman for information concerning cost and included benefits.**

**Please forward this Notice to organizations & individuals at your location & other company sites who have interest in high quality, cost effective electronics!**

It is not necessary to respond if you have already.

...Continued from page 1

The integration of RMS requirements from beginning and throughout the entire life-cycle of a system has re-emerged as an idea in the workplace. Difficulty surfaces however, when we attempt to translate this idea into practical application. Many of us in the RMS community have grown accustomed to and comfortable with working in our own professional lanes as we move through the life cycle process. In doing so, we often become experts of the “particular” without fully appreciating and understanding the entire process or desired end product result. Our well-intended, but often too focused attention on the particular contributed, possibly, to the decline in leadership interests in RMS issues and requirements for the past ten years.

### **Paradigm Breakthrough via Education**

As RMS practitioners and specialists we have to broaden our understanding of the life-cycle process. This may mean we need to become generalists. As we become generalists we also have to create a workplace environment that encourages our design engineering, logistics, and software colleagues to gain a better appreciation of the role RMS in the system engineering process.

On campus throughout the U.S. interdisciplinary system engineering classes are being offered. At institutions such as the University of Maryland, Southern Methodist University, and the Defense Acquisition University, just to name a few, degree and non-degree courses are being offered. Enrollment in these courses may be the first step in implementing system-engineering practices as intended. RMS specialists, design engineers, and logisticians will have the opportunity to communicate with each other and should discover that they have more in common than not. The lessons they study together will confirm everyone’s understanding and acceptance that the players within the system engineering process have to work together from the conceptual design phase to system fielding and beyond.

### **Leadership Contribution & Support**

Not unlike the specialists mentioned above, leaders of many organizations frequently are unable to see the big picture in terms of achieving a desired end. While focused on the immediate task, mission or assignment particular to their discipline they frequently lose sight of the ultimate long-term goal or purpose of their organization. Because many fail or choose not to see the big picture, they in turn help foster an environment that leads to adopting narrow specialized office practices. Most of us in the RMS community have come to refer to this approach as stovepipe thinking.

RMS practitioners have often attempted to enthusiastically and professionally embrace the end-to-end approach to system engineering. They reportedly have been prevented from implementing such an approach by their immediate supervisors who are trapped in a culture of past practices. These individuals want everyone to continue to work within their own technical lanes, just as they have in the past. Their paradigm stems from past success in stovepipe organizations. Past organizational and career success suggests that what has worked for them once will work for their current organization and employees. On those occasions when their stovepipe organizations experienced low productivity their solution was to radically reorganize the workplace.

This proved to be a Catch 22-type situation within the RMS community. Prior to 1993, the year of major Government-industry acquisition reform, supervisors and practitioners within the RMS community often felt that they were in competition with their colleagues in other professional disciplines. This reinforced a stovepipe mentality among supervisors and employees alike. Office reorganization historically has been viewed as the cure-all for this situation. In the name of reducing employee competitive friction and improve productivity, offices were reorganized on a periodic basis. The reorganized office often resulted in reinforcing cultural barriers between employees from various technical disciplines. Recent experience demonstrates that such practices eventually, in turn, created bloated organizations that finally collapsed upon themselves.

As a reaction to this collapse, many managers and supervisors, in desperation, jumped onto the system engineering bandwagon. They often did so not because it was the correct thing to do, but because there was no viable alternative them to pursue. Because their intent was not sincere, the implementation of the system engi-



neering process was faulty. They seemingly reacted to the collapse of their stovepipe organizations by implementing the system engineering process to the extreme. Specialized disciplines were shunned and all were to do system engineering regardless of their level of expertise with end-to-end life cycle management process and procedures. For example, RMS offices were eliminated or reduced to a powerless shadow of themselves and the employees were scattered throughout various parts of organizations without any clear indication of their duties and responsibilities. The baby was thrown out with the bath water.

Whatever short terms gains were achieved from adopting a system engineering approach, they were soon eroded by inefficiencies resulting from the benign neglect of technical detail that, for example, RMS experts could contribute to the system engineering process. Organizational history is about to repeat itself. Again costs are spiraling and in response, many organizations within industry and Government are beginning to reorganize--once again!

To help avoid repeating the errors of the past leaders needs to have the desired end-state clearly in view. Allow me to illustrate this point. The automobile manufacturer that continues to make the same transmission without adjusting for changes in engine design and capability soon finds himself or herself in both technological and fiscal difficulty. Likewise, the automobile manufacturer that rearranges existing transmission technology to accommodate advances in engine design without staying abreast of new transmission technology will also be confronted with increasing technological and economical problems.

During this era of change in which system RMS considerations are given their long overdue place in the system engineering process, leaders can avoid the sins of the past by better understanding the integrated, holistic system engineering approach. In the process of formulating and implementing an end-to-end system engineering approach the first challenge is to make certain that RMS specialists remain at the technological cutting edge of their disciplines. Secondly, they have to make certain that RMS specialists are an integral part of the system engineering team---from cradle (conceptual design) to grave (recycle & disposal). New initiatives are not required. The correct implementation of system engineering principles is all that is required. An educated and trained workforce can achieve this end.

### **Education and Training is not a Boondoggle**

There are few things in this world that get my dander up more than the attitude that educating and training the workforce is waste of time and resources. There should be a litmus test for individuals in positions of responsibility that think this way. If the test comes up positive they should be migrated to a position of lesser responsibility until such time they are re-educated or come to know better by some other means. If your organization does not have the time and resources to train and educate its workforce, its relevance and longevity has to fall into question.

Within the electronics industry, for example, technology is said to be evolving every nine months. New technologies and procedures are increasingly available that can improve the inherit reliability of a system in a manner that can exponentially reduce maintainability and supportability requirements while lowering total ownership costs. RMS practitioners must be given the opportunity to educate themselves to these changes so that they can properly incorporate the latest technological innovations into the system engineering process. Staying on the cutting edge of RMS technologies will help the RMS practitioner reduce the operating and support costs of an organization.

Secondly, to help ensure the future and continued implementation of the system engineering process, demographics must be taken into account. The graying of the workforce increasingly becomes a reality and the retirement bubble is about to hit. Corporate leadership must give RMS professionals the opportunity to grow their own. Supposed funding constraints or work backlog can no longer be used as an excuse. Failure to educate and train the RMS workforce so they remain on top of their discipline within the "system engineering" environment, is a management issue that will have long-term adverse consequences in an increasingly competitive global environment.

One of the reasons we have the best military force in the world, in large part, is due to the training and educational opportunities each warfighter is provided throughout his or her career. The Defense Department continues to educate and train the uniform members of its Services in spite of the constantly challenging and changing pace of its goals and objectives. To do otherwise would prevent us from having a fighting force that is second to none. Civilian organizations in Government and industry will do good to follow this example with respect to providing educational and training opportunities to the RMS workforce.

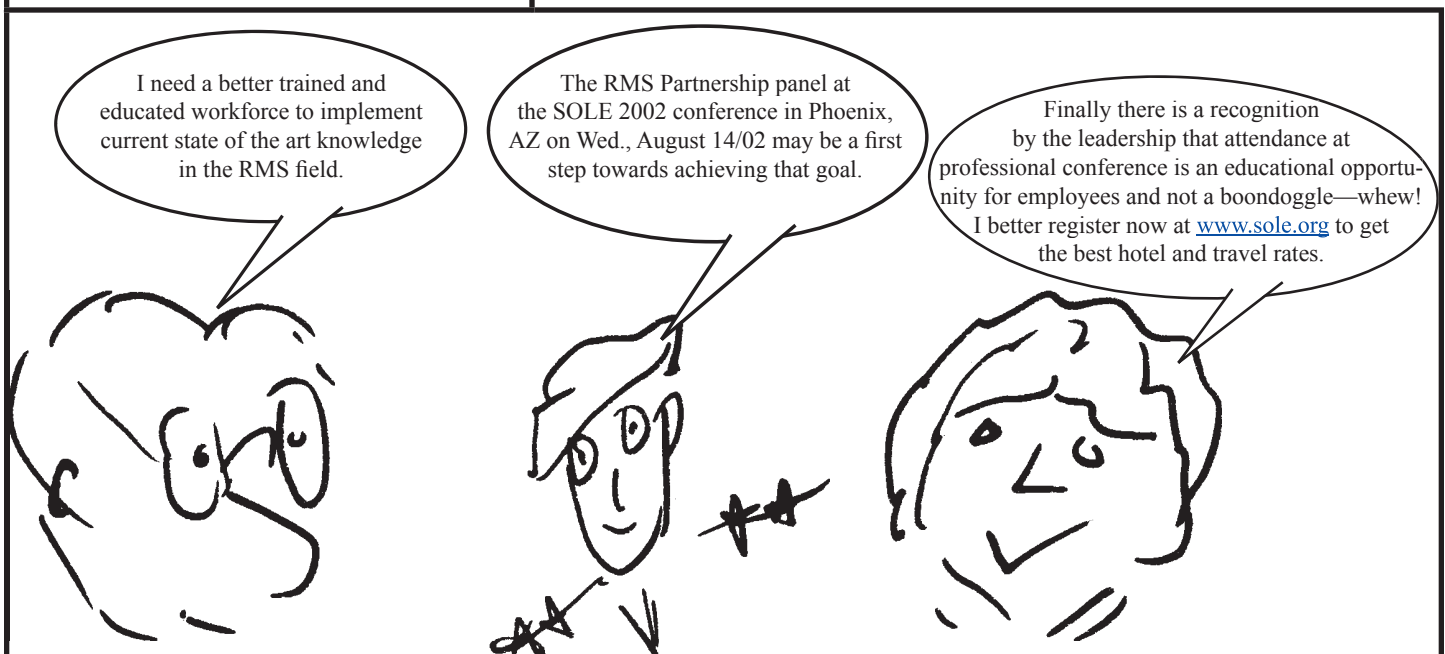
Colleges, universities, workshops, conferences, and professional society membership opportunities are abounding that can help to keep RMS professionals technologically acute. These organizations have the skill and the experience to educate and train RMS professionals and the system engineering workforce in general, on the latest techniques and methodologies necessary to keep organizations on the "cutting edge of change." The workforce's participation in such activities is not a boondoggle! It is an opportunity for all of us to remain domestically and militarily competitive.

### **Conclusion**

My intent of this discussion was to focus our attention on areas that will help ensure the successful re-emergence of RMS issues and requirements within the system engineering process. Educational opportunity, a paradigm change for the leadership, and a new management approach to grow and maintain the RMS workforce has been advocated. I want to encourage all of us to positively respond to the re-emergence of the RMS discipline within the workplace. Understanding the value added that RMS requirements bring to the end-to-end system engineering process is just a beginning. 🌐

### **Another Day at the Office**

by Dr. Russell A. Vacante



**Visit the TRANSLOG International Website**

at

<http://translog.seta.com>

## RMS Partnership Panel at SOLE 2002

Wednesday, 14 August/02  
1:30 – 3:00 p.m.  
Pointe South Mountain Resort  
7777 South Pointe Parkway,  
Phoenix, Arizona  
Registration information: [www.sole.org](http://www.sole.org)

### **“The Business Case for Improved Reliability,”**

**Moderator, Dr. Russell A. Vacante Chairman RMS Partnership**

#### Featured Speakers:

- Dereck A. McLuckey  
Operations Director  
The Boeing Company  
Topic: RMS - Lessons Learned Through Distribution Manufacturing and Maintenance and Operations - “What has Worked and What Has Not Worked”
- Michael D. Frederickson  
Director, U.S. Navy Center of Excellence for Electronics Manufacturing  
American Competitiveness Institute  
Philadelphia, PA
- Jerry Beck  
Senior Program Analyst  
Office of the Assistant Deputy Under Secretary of Defense Logistics Plans & Programs
- Tom Nondorf  
Principle Manager for Reliability, Maintainability & Human Factors  
Aircraft & Missiles  
The Boeing

### **Advertisements Now Being Accepted for the RMS Partnership Newsletter**

For details please contact Mr. Jim French at (703) 264-7570, FAX (703) 264-7551 or e-mail him at: [JimF@aiaa.org](mailto:JimF@aiaa.org)

The Newsletter has wide and varied circulation among professionals in the industry, defense communities, and academia. The readership includes reliability, maintainability, supportability, logistics and standards professionals. The Newsletter is accessible electronically from the RMS Partnership home page at <http://www.enre.umd.edu/rms>. Also, the Newsletter is distributed at conference and symposiums and a limited number of hard copies are distributed via the postal office.

The RMS Partnership Newsletter may be reproduced for public use, without modification. There are no other copyright restrictions.

## Partnership Primary (P) & Alternative (A) Points of Contact

### RMS Partnership, Chair

Dr. Russell A. Vacante  
(703) 805-4864  
FAX: (703) 805-3011  
email: (home) [russov@erols.com](mailto:russov@erols.com)

#### Aerospace Industry Association (AIA)

Robert Hawiszczak (P)  
(972) 575-6239  
FAX: (972) 575-6244  
email: [r-hawiszczak@raytheon.com](mailto:r-hawiszczak@raytheon.com)  
Paula Wright (A)  
(617) 594-1892  
FAX: (617) 594-6358  
email: [paula.wright@ae.ge.com](mailto:paula.wright@ae.ge.com)

#### American Institute of Aeronautics & Astronautics (AIAA)

James E. French (P)  
(703) 264-7570  
FAX: (703) 264-7551  
email: [JimF@aiaa.org](mailto:JimF@aiaa.org)

#### American National Standards Institute (ANSI)

Charlie Zegers (P)  
(212) 642-4965  
Fax: (212) 398-0023  
email: [czegers@ansi.org](mailto:czegers@ansi.org)

#### American Society for Quality (ASQ)

Harrison M. Wadsworth, Ph.D. (P)  
(404) 255-8662  
FAX: (404) 250-1493  
email: [hwadswor@isye.gatech.edu](mailto:hwadswor@isye.gatech.edu)  
Patricia Kopp (A)  
(800)-248-1946  
FAX: (414) 2721734  
email: [pkopp@asqc.org](mailto:pkopp@asqc.org)

#### American Society for Testing and Materials (ASTM)

Timothy Brooke (P)  
(610) 832-9729  
FAX: (610) 834-7036  
email: [tbrooke@astm.org](mailto:tbrooke@astm.org)  
Kitty Kono (A)  
(610) 832-9687  
FAX (610) 832-9599

#### Avionics Working Group

Lloyd Condra (P)  
(425) 266-5975  
FAX: (425) 266-8208  
email: [lloyd.conda@pss.boeing.com](mailto:lloyd.conda@pss.boeing.com)  
Louis Gullo (A)  
(561) 989-7931  
email: [Gullo@sensormatic.com](mailto:Gullo@sensormatic.com)

#### Dept. of Defence, ADUSD (Logistic Plans and Programs)

Terry Whalen (P)  
(703) 614-6137  
FAX: (703) 614-8339  
email: [terry.whelen@osd.mil](mailto:terry.whelen@osd.mil)

#### Dept. of Defense/ National Security Agency (NSA)

Richard Terrell (P)  
(410) 859-6927  
FAX: (410) 859-6968  
email: [rterrell@radium.ncsc.mil](mailto:rterrell@radium.ncsc.mil)  
Robert Harmon (A)  
(410) 859-6954  
FAX: (410) 859-6968  
email: [rharmon@radium.ncsc.mil](mailto:rharmon@radium.ncsc.mil)

#### Dept. of Energy (DOE)

Richard J. Serbu, EH-31, (P)  
(301) 903-2856  
FAX: (301) 903-6172  
email: [richard.serbu@eh.doe.gov](mailto:richard.serbu@eh.doe.gov)  
Jeff Feit, EH-31 (A)  
(301) 903-3927  
FAX: (301) 903-6172  
email: [jeffrey.feit@eh.doe.gov](mailto:jeffrey.feit@eh.doe.gov)

#### Electrical Generating Systems Assn. (EGSA)

Herbert V. Whittall (P)  
(561) 562-2641  
FAX: (561) 564-3863  
email: [herbwhittall@worldnet.att.net](mailto:herbwhittall@worldnet.att.net)

#### Electronic Industries Association (EIA)

Yvonne Lord (P)  
(410) 765-2741  
FAX: (410) 765-3665  
email: [yvonne\\_lord@mail.northgrum.com](mailto:yvonne_lord@mail.northgrum.com)

#### Institute Of Environmental Science & Technology (IEST)

Yvonne Lord (A)  
(410) 765-2741  
FAX: (410) 765-3665  
email: [yvonne\\_lord@mail.northgrum.com](mailto:yvonne_lord@mail.northgrum.com)

#### Florida Institute of Technology (NE)

Lloyd H. Muller, Ed.D., CPL (A)  
(703) 751-1060  
FAX: (703) 751-8272  
email: [lhmuller@aol.com](mailto:lhmuller@aol.com)



**Institute of Engineers (Australia)**

Adrian Stephan (Managing Director) (P)  
Logistics Pty Ltd  
POB 5068  
PINWOOD VIC 3149  
+61 (0)3 9888 2366  
FAX: +61 (0)3 9888 2377  
email: [adrian.stephan@logistic.com.au](mailto:adrian.stephan@logistic.com.au)  
[www.logistic.com.au](http://www.logistic.com.au)

**Institute for Interconnecting & Packing Electronic Circuits (IPC)**

David W. Bergman (P)  
(708) 677-2850  
FAX: (708) 677-9570  
email: [bergda@IPC.org](mailto:bergda@IPC.org)

**International Electro-Technical Commission (IEC TC-56)**

John A. Miller (P)  
(714) 842-4776  
FAX: (714) 458-4330  
email: [millerja@earthlink.net](mailto:millerja@earthlink.net)  
John Koper (A)  
(301) 843-0148  
email: [johnkoper@hotmail.com](mailto:johnkoper@hotmail.com)

**International Society for Logistics (SOLE)**

David L. Place (P)  
(301) 677-6739  
FAX: (301) 677-4870  
email: [placedl@meade-inscom.army.mil](mailto:placedl@meade-inscom.army.mil)  
Charlie O. Coogan (A)  
(614) 436-1609  
email: [ccoogan@ale.com](mailto:ccoogan@ale.com)

**KPL Systems**

Dr. Kenneth P. LaSala  
(301) 625-9457  
FAX: (301) 625-9457  
email: [kppls@prodigy.net](mailto:kppls@prodigy.net)

**NASA Headquarters**

Wilson B. Harkins III (P)  
(202) 358-0584  
FAX: (202) 353-3104  
email: [wilson.harkins@hq.nasa.gov](mailto:wilson.harkins@hq.nasa.gov)

**National Institute of Standards & Technology (NIST)**

Walter G. Leight (P)  
(301) 975-4010  
email: [walter.leight@nist.gov](mailto:walter.leight@nist.gov)

**Office of the Secretary of Defense (OSD)(Systems Engineering Office/R&M Policy/ Standardization Activity)**

George Desiderio (P)  
(703) 697-6329  
FAX: (703) 614-9884  
email: [desiderg@acq.osd.mil](mailto:desiderg@acq.osd.mil)  
Merrill Yee (A)  
OUSD(AT&L)IO/SE  
(703) 695-2300  
FAX: (703) 614-9884  
email: [merrill.yee@osd.mil](mailto:merrill.yee@osd.mil)

**Society of Automotive Engineers (SAE)**

Kenneth H. Brockel (P)  
(732) 532-2394  
FAX: (732) 532-8408  
email: [kenneth.brockel@mail1.monmouth.army.mil](mailto:kenneth.brockel@mail1.monmouth.army.mil)  
Jim Brunke (A)  
(310) 797-1395  
FAX: (310) 797-3714

**Society of Reliability Engineers (SRE)**

David Mandel (P)  
(703) 418-4236  
FAX: (703) 418-1662  
email: [mandeld@navsea.navy.mil](mailto:mandeld@navsea.navy.mil)  
Reid Willis (A)  
(703) 780-6017  
FAX: (917) 477-6313  
email: [reidwillis@juno.com](mailto:reidwillis@juno.com)

**Vice Chair, Z1 Dependability Subcommittee**

Ned H. Criscimagna (P)  
(301) 918-1526  
FAX: (301) 371-6329  
email: [ncriscimagna@iitri.org](mailto:ncriscimagna@iitri.org)

**U.S. Army**

Jane Krolewski (A)  
(410) 278-4657  
FAX: (410) 278-3111  
email: [hock@amsaa@army.mil](mailto:hock@amsaa@army.mil)

**U.S. Air Force**

TBD

**U.S. Navy**

John (Bill) Lohmar (P)  
(202) 781-3636  
FAX: (202) 781-4565  
email: [lohmarjw@navsea.navy.mil](mailto:lohmarjw@navsea.navy.mil)  
Norm Way (A)  
(301) 757-8785  
FAX: (301) 755-8806  
email: [wayno@navair.navy.mil](mailto:wayno@navair.navy.mil)  
Dewana G. Bagley (A)  
(301) 227-0032  
email: [BagleyDG@nswccd.navy.mil](mailto:BagleyDG@nswccd.navy.mil)

**University of Maryland**

Dr. Marvin Roush (P)  
(301) 405-7299  
email: [roush@eng.umd.edu](mailto:roush@eng.umd.edu)

**Associate Member (IEEE)****C Hanse Industries**

Chris Hanse (P)  
(616) 673-8638  
email: [hanse@datawise.net](mailto:hanse@datawise.net)

**Gov. Industry Data Exchange Program**

Glen Colman (P)  
(703)602-8018 Ext. 354  
FAX: (703) 602-6437  
email: [colmangw@navsea.navy.mil](mailto:colmangw@navsea.navy.mil)

**U.S. Army****Communications-Electronics Command (CECOM)**

Ft. Belvoir  
Olga Daubert (P)  
(703)704-2000  
FAX: (703)704-2532  
email: [O\\_Z\\_Daubert@belvoir.army.mil](mailto:O_Z_Daubert@belvoir.army.mil)



**RELIABILITY, SUPPORTABILITY &  
MAINTAINABILITY (RMS) PARTNERSHIP MEETING**

Wednesday, September 25, 2002

8:00am - 5:00pm

University of Maryland College Park

Maryland Room, Marie Mount Hall

See RMS home page "Events" for directions

<http://www.enre.umd.edu/rms>



RMS Partnership  
c/o Russell A. Vacante, Ph.D.  
13157 Trails End Court  
Manassas, VA 20112-3698

Address Corection Requested